UAV Evolution - Where are we?

Navy

Army

Air Force

1985 1990 1995 2000 2005 2010 2015

Pioneer

FireScout

Sensor/Platform/Comm Upgrades

Vertical Take-off and Landing Tactical UAV (VTUAV)

Extended Range Multi-Purpose

Hunter

Sensor/Platform/Comm Upgrades

Shadow Tactical UAV (TUAV)

Predator

Weaponize/Sensor/Platform/Comm Upgrades

Global Hawk

Spiral Sensor/Platform/Comm Upgrades

Unmanned Combat Aerial Vehicle (UCAV)

UCAV-AF

UCAV-N

UAV-related S&T

Micro UAVs, payloads, platform, sensors,control,communications, info processing, etc

System Availability

IEW&S
PROGRAM EXECUTIVE OFFICE

"TUAV-Protecting the Point"

Army TUAV

Tactical Unmanned Aerial Vehicle

COL Michael A. Hamilton
PM, TUAV
October 2001

Brigade Shadow 200 UAV

"TUAV-Protecting the Point"

Mission: Army Brigade Level reconnaissance, surveillance, target acquisition, and battle damage assessment

Characteristics/Description:

Wing Span	13 feet
Weight	350 lbs
Range	125 km (reduced endurance 200 km obj)
Airspeed	(70 kt loiter, 105 kt dash)
Altitude	14,000 Ft
Endurance	4 Hours @ 50 km
Primary Payload (s)	EO/IR (up to 60 lb)
Launch/Recovery	100m x 50m Area

Capabilities :

- Automatic Landing and Takeoff
- System and Maintenance Section transportable on 3 C-130s
- Early entry capability with 1 C-130
- Compatible with ABCS
- EO/IR Sensor

Contractors:

- AAI Corporation (Prime) / Raytheon (Sub)

Shadow 200	
Flights	490
Hours	919.1

- Soldier training and system testing at Fort Huachuca, Unit training at Fort Hood (1st Brigade, 4ID)
- Dr. Mark's independent review group believes "Overall program health is sound"
- Many minor changes to system to improve performance/reliability in last year
- April IOT&E planned

Hunter TUAV
Today's Workhorse

"TUAV-Protecting the Point"

Mission: Division and Corps Level reconnaissance, surveillance, target acquisition, and battle damage assessment

Characteristics/Description:

Wing Span	29 Feet
Weight	1600 Lbs
Range	> 200KM
Airspeed	90 Kts cruise (106 Kts Dash)
Altitude	15,000 Ft
Endurance	8-12 Hours with EO/IR
Primary Payload(s)	EO/IR
Launch/Recovery	200M x75M

Capabilities:

- Fully Qualified System
- Versatile Payload Platform
- Multiple Mission Configurations
- Only Army Extended Range/Endurance UAV
- Stellar Overseas/NTC/JRTC Performance
- Interim Extended Range/Multi Purpose UAV for the Army

Contractors:

- TRW (Prime) / IAI

Hunter	
Flights	5688
Hours	20153.8

- Systems in place at III CORPS (Fort Hood), Training Base (Fort Huachuca), Joint Readiness Training Center (Fort Polk), Training Base (Fort Huachuca), IBCT #1 (Fort Lewis)
- 21 Payload/Sensor Demonstrations
- 3 Operational Deployments to Macedonia
- 18 Joint Readiness Training Center Exercises (JRTC)

Evolving TUAV Capabilities Include …

—"TUAV-Protecting the Point"

Manned/Unmanned Teaming

Airborne Manned-Unmanned System Technology (AMUST):

Demonstrate teamed interoperability of manned and unmanned platforms using AH-64 Apache and RQ-5A Hunter UAV

Accomplishments

- The Apache received direct video feed (Level 2 control) from the UAV at all times.
- The AH-64 controlled both the UAV and the payload cameras (Level 4 control) for 76 minutes.

When in control:

- Apache directed the aircraft flight patterns by waypoint navigation to the target area
- Slewed the camera to identify the targets and send video to ground locations.

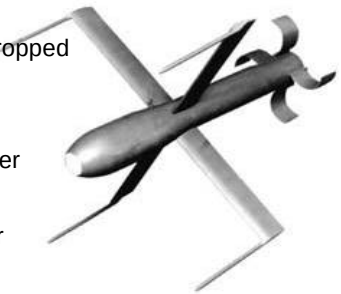
One System, One GCS

Armed UAV's

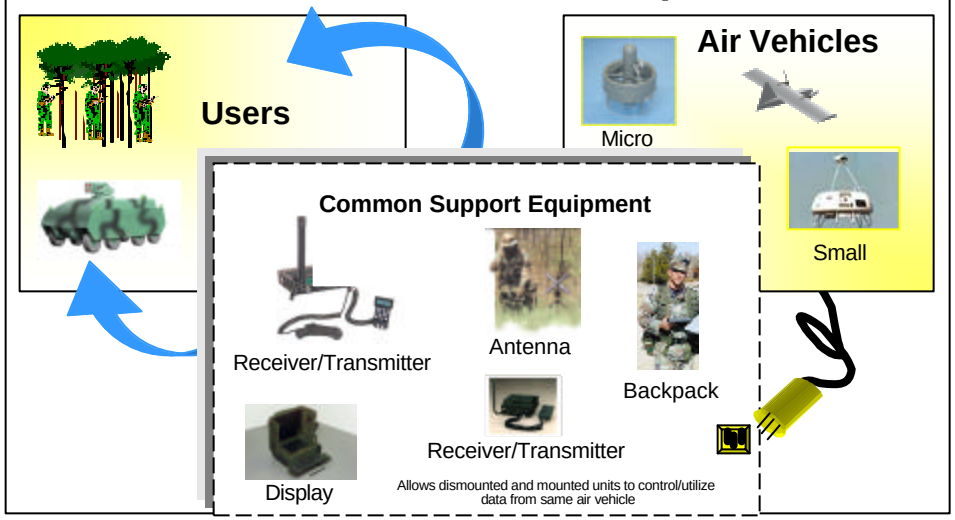
- **Planned demo mounts Brilliant Anti-tank (BAT) Submunition on Hunter**
  - BAT is routinely dropped from Cessna aircraft similar to Hunter
  - BAT deploys from ATACMS at Hunter Operational Altitudes
  - BAT operates autonomously once dropped from Hunter, simplifying integration

Concept

- Mount 2 BAT submunitions , one under each wing
- Demo is in two phases over one year



Small Unit UAV Concept



Predator UAV (Air Force)

- First Flight: June 1994
- Over 30,000 flight hours
- System includes: 4 air vehicles, 1 ground station, and 1 communications system
- 12 systems planned

- Sensors: Synthetic Aperture Radar, Electo-Optical/Infrared, Video and Laser Designator
- Max Altitude: 25,000 feet
- Payload Weight: 450 lbs
- Endurance: 24+ hours
  - 14 hours at 400 nm
- Main operating base: Indian Springs AF Aux Field, NV
- Contractor: General Atomics Aeronautical Systems

Global Hawk (Air Force)

- Sensors: Synthetic Aperture Radar and Electo-Optical/Infrared
- Endurance: 35+ hours
  - 24 hours at 1200 nm
- Max Altitude: > 65,000 feet
- Payload Weight: 2,000 lbs
- Initial operating base: Beale AFB, CA
- Contractor: Northrop Grumman

- First Flight: February 1998
- Over 100 flights, over 1200 flight hours
- System includes: 1 air vehicle with sensors, 1 ground station
- 51 air vehicles and 9 ground stations planned